



Scheme for THIRD SEMESTER (CIVIL ENGINEERING)

Sr. No.	Subject	Study Scheme			EVALUATION SCHEME						Total Marks
					INTERNAL ASSESSMENT		EXTERNAL ASSESMENT (EXAMINATION)				
					Theory	Practical	Written Paper		Practical		
					Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.	
3.1	Fluid Mechanics	3	-	2	25	25	100	3	50	3	200
3.2	Structural Mechanics	4	-	2	25	25	100	3	50	3	200
3.3	Surveying – I	2	-	5	25	25	100	3	50	3	200
3.4	Construction Materials	4	-	2	25	25	100	3	50	3	200
3.5	Building Construction	5	-	2	25	25	100	3	50	3	200
3.6	Civil Engineering Drawing -I	-	-	4	-	50	-	-	100	3	150
# Student Centred Activities		-	-	5	-	25	-	-	-	-	25
Total		18	-	22	125	200	500	-	350	-	1175

Student Centred Activities will comprise of co-curricular activities like extension lectures, library studies, games, hobby clubs e.g. photography, painting, singing, seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities, Civil Defence/Disaster Management activities etc.



SYLLABUS: Polytechnic (CE)

Department: Civil Engineering – 3rd Semester

Subject: Fluid Mechanics (Theory)

Subject Code: 120731

Detailed Contents

Unit No.1 Introduction

Topic No.1: Fluid. 1. Real Fluid, 2. Ideal Fluids, Fluid Mechanics, Hydrostatics, Hydrodynamics, Hydraulics

Unit No.2 Properties of Fluid

Topic No.2: Mass Density, Specific Weight, Specific Gravity, Viscosity Surface Tension, Cohesion, Adhesion, Capillarity, Vapour Pressure, Compressibility.

Unit No.3 Hydrostatics Pressure

Topic No.3: Pressure, Intensity of Pressure, Pressure Head Pascal's Law and Its Applications, Total Pressure, Resultant Pressure, Centre Of Pressure.

Topic No.4: Total Pressure and Centre of Pressure on Horizontal. Total Pressure and Centre Of Pressure, Inclined

Unit No.4 Measurement of Pressure

Topic No.5: Atmospheric Pressure, Gauge Pressure, Vacuum Pressure, Absolute Pressure Piezometer, Manometer And Differential Manometer, Bourden Gauge Dead Weight Pressure Gauge

Unit No.5 Fundamental of Fluid Flow

Topic No.6: Types of Flow. Steady and Unsteady, Laminar And Turbulent Flow, Uniform And Non-Uniform Discharge, Continuity Equation

Topic No.7: Types of Hydraulic Energy, Potential Energy, Kinetic Energy, Pressure Energy Bernoulli's Theorem and Its Statement

Unit No.6 Flow Measurement

Topic No.8: Venturimeter and Mouthpiece Pitot tube orifice And Orifice meter Current meter, Notches and Weir.

Unit No.7 Flow through Pipes

Topic No.9: Reynolds Number, Laminar and Turbulent Flow - Explained Through Reynolds's Experiment Critical Velocity and Velocity Distributions in A Pipe For Laminar Flow

Topic No.10: Head Loss In Pipe Lines Due To Friction, Sudden Expansion Sudden Contraction Entrance, Exit, Obstruction and Change of Direction, Hydraulic Gradient Line And Total Energy Line.

Topic No.11: Pipes In Series And Parallel, Water Hammer Phenomenon And Its Effects Unit

			Internal Assessment		External Assessment (Examination)			Total Marks	
Study Scheme			Evaluation Scheme						
Hrs/Week			Theory	Practical	Written Paper		Practical	125	
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks		Hrs
3	-	2	25	-	100	3	-		-

Text Books:

1. Computer System Architecture By M. Mano, Prentice-Hall.
2. Structured Computer Organization By A.S. Tanenbaum, 6th Edition, Prentice-Hall Of India, Eastern Economic

Reference Books:

1. Computer Organization, 5th Edi, By Carl Hamacher, Zvonko Vranesic, 2002, Safwatzaky.
2. Computer Organization And Design, 2nd Ed., By David A. Patterson And John L. Hennessy, Morgan 1997, Kauffmann.
3. Computer Architecture And Organization, 3rd Edi, By John P. Hayes, 1998, Tmh

INSTRUCTIONAL STRATEGY

Hydraulics being a fundamental subject, teachers are expected to lay considerable stress on understanding the basic concepts, principles and their applications. For this purpose, teachers are expected to give simple problems in the class room and provide tutorial exercises so as to develop necessary knowledge for comprehending the basic concepts and principles. As far as possible, the teach in of the subject be supplemented by demonstrations and practical work in the laboratory. Visit to hydraulic research stations must be carried out.



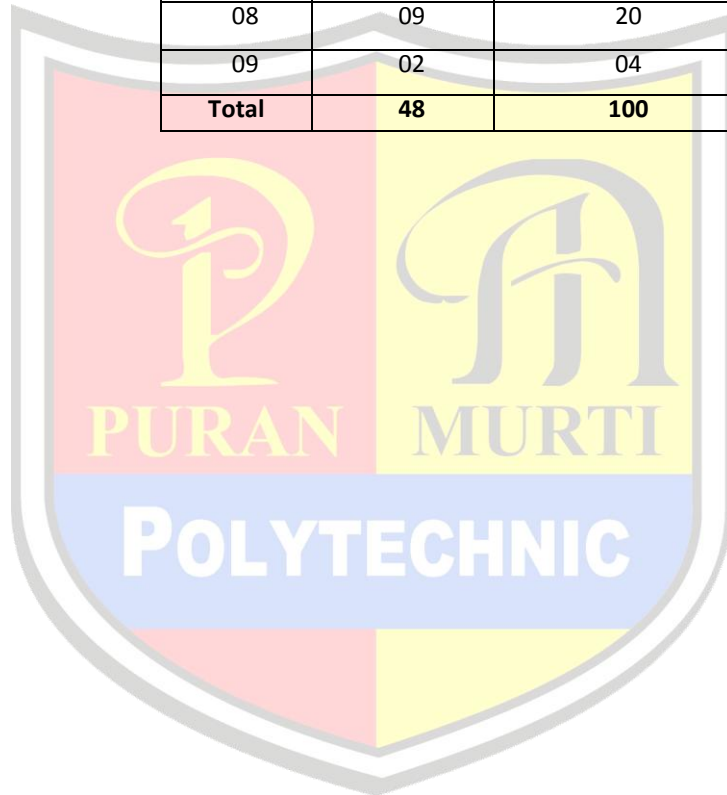
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SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
01	01	01
02	03	05
03	08	16
04	05	10
05	06	13
06	06	13
07	08	18
08	09	20
09	02	04
Total	48	100





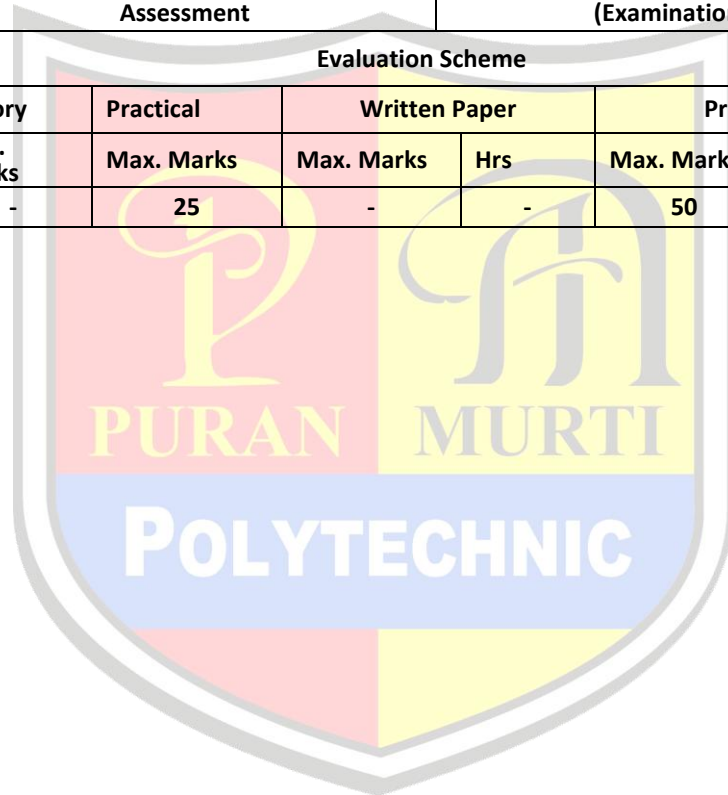
Subject: Fluid Mechanics (Practical)

Subject Code: 120731(p)

List of practical experiment

1. To verify Bernoulli Theorem
2. To find out Venturimeter coefficient
3. To determine coefficient of velocity (C_v), Coefficient of discharge (C_d)
4. Coefficient of contraction (C_c) of an orifice and verify the relation between them
5. To perform Reynolds experiment
6. To verify loss of head in pipe flow due to
 - a. Sudden enlargement
 - b. Sudden contraction
 - c. Sudden bend
7. Demonstration of use of current meter and pitot tube
8. To determine coefficient of discharge of a rectangular notch/triangular notch

			Internal Assessment		External Assessment (Examination)				Total Marks
Study Scheme			Evaluation Scheme						
Hrs/Week			Theory	Practical	Written Paper		Practical		75
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	2	-	25	-	-	50	3	





Detailed Contents

Unit No.1 Properties of Materials

- Topic No.1: Classification Of Materials:-Elastic Materials, Plastic Materials Ductile Materials, Brittle Materials.
- Topic No.2: Introduction To Test On Materials:-Tensile Test, Compressive Test, Impact Test, Fatigue Test., Torsion Test.

Unit No.2 Simple Stresses And Strains

- Topic No.3: Concept of Stress: Normal and Shear Stresses. Concept Of Strain And Deformation:- Longitudinal And Transverse Strain. Poisson's Ratio, Volumetric Strain.
- Topic No.4: Hooke'slaw, Modulus of Elasticity and Rigidity, Bulk Modulus Of Elasticity. Relationship between the Elastic Constants
- Topic No.5: Stresses And Strains In Bars Subjected To Tension Compression. Extension Of Uniform Bar Under Its Own Weight.
- Topic No.6: Stress Produced In Compound Bars (Two Or Three) Due To Axial Load.
- Topic No.7: Stress-Strain Diagram For Mild Steel And Hysd Steel, Mechanical Properties, Factor Of Safety. Temperature Stresses And Strains.

Unit No.3 Shear Force And Bending Moment

- Topic No.8: Concept Of A Beam And Supports (Hinges, Roller And Fixed). Types Of Beams: Simply Supported, Propped, Over Hang Cantilever And Continuous Beams (Only Concept).
- Topic No.9: Types Of Loads (Dead Load, Live Load, Snow Load, Wind Load Seismic Load As Per Is Codes Etc) Types Of Loading (Point, Uniformly Distributed And Uniformly Varying Loads), Concept Of Bending Moment And Shear Force, Sign Conventions
- Topic No.10: Bending Moment And Shear Force Diagrams For Cantilever, Simply Supported And Overhanging Beams Subjected To Concentrated, Uniformly Distributed Relationship Between Load, Shear Force And Bending Moment, Point Of Maximum Bending Moment, And Point Of Contra Flexure.

Unit No.4 Moment Of Inertia

- Topic No.11: Concept Of Moment Of Inertia And Second Moment Of Area And Radius Of Gyration. Theorems Of Parallel And Perpendicular Axis.
- Topic No.12: Second Moment Of Area Of Common Geometrical Sections: Rectangle, Triangle, Circle (Without Derivations).Second Moment Of Area For L, T And I Sections, Section Modulus.

Unit No.5 Bending Stresses In Beams

- Topic No.13: Concepts Of Pure/Simple Bending Assumptions Made In The Theory Of Simple Bending.
- Topic No.14: Derivations and Application Of Bending Equation To Circular Cross-Section, I Section, T&L Sections Only Moment Of Resistance Calculations Of Bending Stresses In Simply Supported Beam

Unit No.6 Combined Direct And Bending Stresses

- Topic No.15: Concentric And Eccentric Loads Single Axis Eccentricity Only. Effect Of Eccentric Load On The Section Stresses Due To Eccentric Loads. Numerical In The Case Of Short Columns. Simple Problems On Stability of Masonry Dams And Retaining Walls

Unit No.7 Stresses In Beams

- Topic No.16: Concept Of Shear Stresses In Beams. Shear Stress Distribution In Rectangular, Circular I, T, L Sections (Formula To Be Stated, No Derivation)

Unit No.8 Slope And Deflection

- Topic No.17: Necessity For Determination Of Slope And Deflection. Moment Area Theorem (No Derivation, Numerical Problems)

Unit No.9 Columns

- Topic No.18: Theory Of Columns Euler's And Rankin Formula (No Derivation)

Unit No.10 Analysis Of Trusses

- Topic No.19: Concept Of A Perfect, Redundant And Deficient Frames.
- Topic No.20: Assumptions And Analysis Of Trusses By: Method Of Joints, Method Of Sections, Graphical Method

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
4	-	-	25	-	100	3	-	-	



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Recommended Books

- i) Ramamrutham, S., "Strength Of Materials", Dhanpat Rai And Sons, New Delhi
- ii) Ram Chandra, "Applied Mechanics And Strength Of Materials", Standard Publishers. Delhi:
- iii) Punmia, Bc., "Strength Of Materials", Standard Publishers, Delhi,

Instructional Strategy

Teachers Are Expected To Give Simple Exercises Involving The Applications Of Various Concepts And Principles Being Taught In The Subject. Efforts Should Be Made To Prepare Tutorial Sheets On Various Topics And Students Should Be Encouraged/Guided To Solve Tutorial Sheets Independently. In The Practical Works, Individual Students Should Be Given Opportunities To Do Practical Work, Make Observations And Draw Conclusions. Teachers Should Also Conduct Viva Examination In Which Stress Should Be Given On The Understanding Of Basic Concepts And Principles

Suggested Distribution Of Marks

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	02	04
2	12	17
3	16	27
4	04	04
5	06	10
6	06	10
7	04	06
8	04	06
9	04	06
10	06	10
Total	64	100

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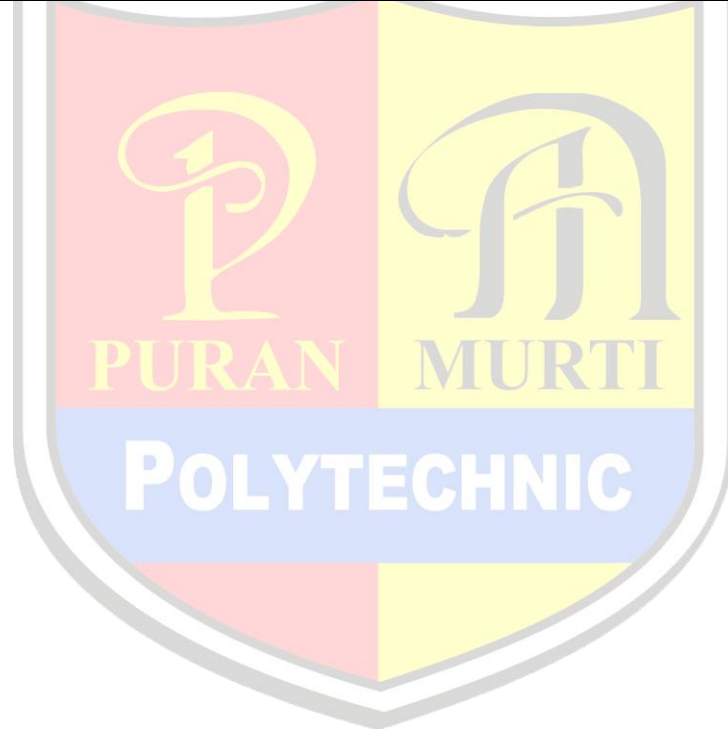
Subject: Structural Mechanics (Practical)

Subject Code: 120732(P)

List of Practical Experiments

1. Determination Of Yield Stress, Ultimate Stress, Percentage Elongation And Plot The Stress Strain Diagram And Compute The Value Of Young's Modulus On Mild Steel
2. Testing Of Hysd Steel
3. Determination Of Young's Modulus Of Elasticity For Steel Wire With Searl's apparatus
4. Determination Of Modulus Of Rupture Of A Concrete Beam
5. Determination Of Maximum Deflection And Young's Modulus Of Elasticity In Simply Supported Beam With Load At Middle Third Point
6. Verification Of Forces In A Framed Structure

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	2	-	25	-	-	50	3	75





Detailed Contents

Unit No.1 Introduction

Topic No.1: Basic Principles Of Surveying, Concept And Purpose Of Surveying, Measurements-Linear And Angular, Units of Measurements

Topic No.2: Instruments Used For Taking These Measurements, Classification Based On Surveying Instruments

Unit No.2 Chain Surveying

Topic No.3: Purpose of Chain Surveying, Principles Of Chain Surveying And Its Advantages And Disadvantages
Obstacles in Chain Surveying, Direct and Indirect Ranging Offsets and Recording of Field Notes, Errors In Chain Surveying And Their Corrections

Unit No.3 Compass Surveying

Topic No.4: Purpose of Compass Surveying. Use of Prismatic Compass: Setting and Taking Observations

Topic No.5: Concept Of Following with Simple Numerical Problems: Meridian - Magnetic and True, Bearing - Magnetic, True and Arbitrary, Whole Circle Bearing And Reduced Bearing, Fore and Back Bearing, Magnetic Dip and Declination

Topic No.6: Local Attraction - Causes, Detection, Errors and Corrections, Problems on Local Attraction, Magnetic Declination And Calculation of Included Angles in a Compass Traverse

Unit no. 4 Leveling

Topic No.7: Purpose of Leveling, Concept Of A Level Surface, Horizontal Surface, Vertical Surface, Datum, Reduced Level And Bench Marks

Topic No.8: Identification of Various Parts Of Dumpy Level And Use Of Dumpy Level, Engineer' Level, Auto Level, Advantages and Disadvantages, Use Of Auto Level.

Topic no.9: Concepts Of Line Of Collimation, Axis Of The Bubble Tube, Axis Of The Telescope And Vertical Axis, Leveling Staff: Single Piece, Folding, Invar Precision Staff, Telescopic

Topic no.10: Temporary Adjustment and Permanent Adjustment of Dumpy Level by Two Peg Method. Concept Of Back Sight, Foresight, Intermediate Sight, Change Point, To Determine Reduce Levels

Topic no.11: Level Book and Reduction of Levels By
1: Height of Collimation Method and 2: Rise And Fall Method

Topic no.12: Arithmetic Checks, Problem on Reduction of Levels, Fly Leveling, Check Leveling and Profile Leveling (L-Section And X-Section), Errors in Leveling, Permissible Limits, Reciprocal Leveling. Numerical Problems

Topic no.13: Computations Of Areas of Regular Figures and Irregular Figures. Simpson's Rule: Prismatic Formula And Graphical Method Use Of Plan Meter For Computation Of Areas, Numerical Problems.

Unit no.5 Plane Table Surveying

Topic no.14: Purpose Of Plane Table Surveying, Equipment Used In Plane Table Survey. Setting Of A Plane Table:
(A) Centering (B) Leveling (C) Orientation

Topic no.15: Methods Of Plane Table Surveying
(A) Radiation,(B) Intersection(C) Traversing (D) Resection

Topic no.16: Concept Of Two Point and Three Point Problems (Concept Only)

Topic no.17: Errors In Plane Table Survey and Precautions to Control Them. Testing and Adjustment Of Plane Table And Alidade.

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
2	-	-	25	-	100	3	-	-	125

Instructional Strategy

This Is Highly Practice-Oriented Course. While Imparting Theoretical Instructions, TeachersAre Expected To Demonstrate The Use Of Various Instruments In Surveying, Stress Should BeLaid On Correct Use Of Various Instruments So As To Avoid/Minimize Errors DuringSurveying. It Is Further Recommended That More Emphasis Should Be Laid In ConductingPractical Work By Individual Students. Technical Visit To Survey Of India, NorthernRegion And Great Trigonometrical Survey(Gts), Dehradun.

Recommended Books

1. Hussain, Sk And Nagraj, Ms; "Text Book Of Surveying"; New Delhi, S Chand And Co Ltd.
2. Deshpande, Rs; "A Text Book Surveying And Levelling"; Poona, United Book Corporation
3. Kocher, Cl; "A Text Book Of Surveying"; Ludhiana, Katson Publishing House
4. Kanetkar, Tp And Kulkarni, Sv., "Surveying And Leveling", Poona, Avg Parkashan
5. Kanetkar, Tp; And Kulkarni, Sv; "Surveying And Leveling" Poona, Avg Prakashan



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Suggested Distribution Of Marks

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	02	07
2	03	09
3	07	24
4	10	30
5	10	30
Total	32	100





List of practical experiments

1. Chain surveying:
 - a) Ranging a line
 - b) Chaining a line and recording in the field book
 - c) Taking offsets - perpendicular and oblique (with a tape only)
 - d) Setting out right angle with a tape
2. Chaining of a line involving reciprocal ranging
3. Chaining a line involving obstacles to ranging
4. Chain Survey of a small area.
5. Compass Surveying:
 - a) Study of prismatic compass
 - b) Setting the compass and taking observations
 - c) Measuring angles between the lines meeting at a point
6. Leveling:
 - a) Study of dumpy level and leveling staff
 - b) Temporary adjustments of various levels
 - c) Taking staff readings on different stations from the single setting and finding differences of level between them
7. To find out difference of level between two distant points by shifting the instrument
8. Longitudinal and cross sectioning of a road/railway/canal
9. Setting a gradient by dumpy and auto-level
10. Plane Table Surveying
 - a) Study of the plane table survey equipment
 - b) Setting the plane table
 - c) Marking the North direction
 - d) Plotting a few points by radiation method
 - ii) a) Orientation by Trough compass, Back sighting
 - b) Plotting few points by intersection, radiation and resection method
11. Traversing an area with a plane table (at least five lines)
12. Layout of Buildings (from given drawing of two room residential building) by use of surveying instruments.

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	5		25	-	-	50	3	75



Detailed Contents

Unit No.1 Building Stones

Topic No.1: Construction Material, Classification Of Rock, Characteristics Of Good Building Stones, Uses of Stones In Construction

Unit No.2 Bricks & Tiles

Topic No.2: Introduction Of Brick, Constituents Of Good Brick Earth, Manufacturing Of Bricks Types Of Kilns
Topic No.3: Special Types Of Bricks, Classification of Bricks, Testing Of Common Building Bricks, Building Tiles, Special Types of Tiles Stacking Of Bricks and Tiles at Site

Unit No.3 Cement

Topic No.4: Introduction, Flow Diagram Of Manufacturing Of Cement, Various Types Of Cements, Storage Of Cement Tests Of Cement, Properties Of Cement

Unit No.4 Lime

Topic No.5: Introduction of Lime, Classification And Types Of Lime, Calcinations And Slaking Of Lime

Unit No.5 Timber and Wood Based Products

Topic No.6: Identification and Uses of Different Types of Timber, Market Forms Of Converted Timber
Topic No.7: Seasoning Of Timber, Properties Of Timber, Defects In Timber, Decay In Timber, Preservation Of Timber, Other Wood Based Products

Unit No.6 Paints And Varnishes

Topic No.8: Introduction, Purpose and Use of Paints, Types of Paints, Ingredients of Paints, Properties and Uses Of Oil Paints, Water Paints And Cement Paints, Requirements of an Ideal Paints Varnishes and Its Types

Unit No.7 Metals

Topic No.9: Ferrous Metals Their Properties and Uses, Commercial Forms Of Ferrous Metals

Unit No.8 Miscellaneous Materials

Topic No.10: Plastics, Introduction and Uses thermal Insulation, Water Proofing, Sound Insulation

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment			External Assessment (Examination)			
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
4	-	-	25	-	100	3	-	-	125

Recommended Books

- 1) Sharma, Sk; And Mathur, Gc; "Engineering Materials;" Delhi-Jalandhar, S. Chand And Co.
- 2) Surendra Singh; "Engineering Materials;" New Delhi, Vikas Publishing House Pvt. Ltd.
- 3) Chowdhuri, N; "Engineering Materials;" Calcutta, Technical Publishers Of India.
- 4) Bahl, Sk; "Engineering Materials;" Delhi, Rainbow Book Co.

Instructional Strategy

Teachers Are Expected To Physically Show Various Materials While Imparting Instructions. Field-Visits Should Also Be Organized To Show Manufacturing Processes And Use Of Various Materials In Civil Engineering Works. Students Should Be Encouraged To Collect Sample Of Various Building Materials So As To Create A Museum Of Materials In The Polytechnic.

Suggested Distribution Of Marks

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	06	08
2	13	20
3	10	16
4	04	08
5	10	14
6	07	12
7	04	08
8	10	14
Total	64	100



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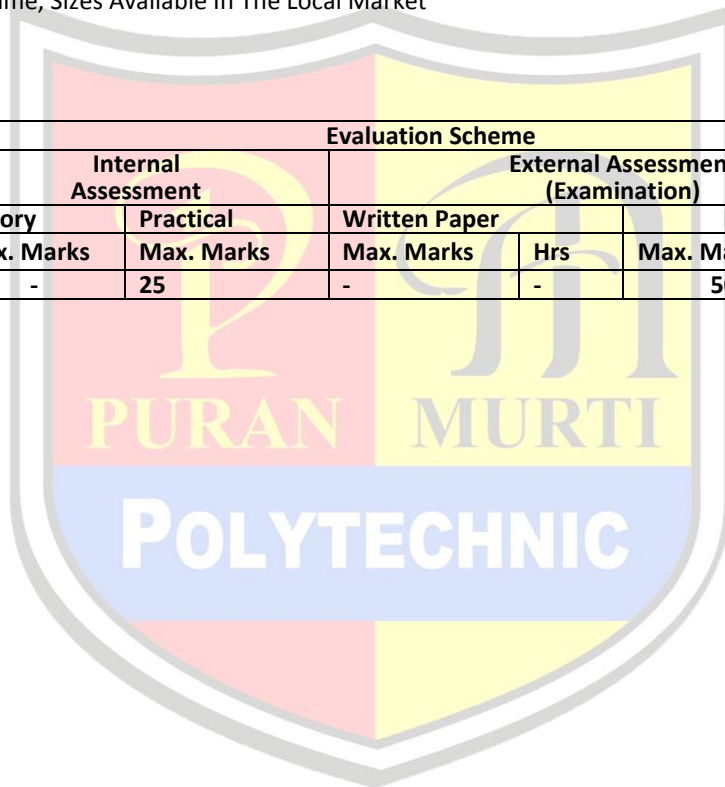
Subject: Construction Materials (practical)

Subject Code: 120734(P)

List of Practical Experiments

1. To Identify The Stones Used In Building Works By Visual Examination
2. To Determine The Crushing Strength Of Bricks
3. To Determine The Water Absorption Of Bricks And Efflorescence Of Bricks
4. To Identify Various Types Of Timbers Such As: Teak, Sal, Chir, Sissoo, Deodar, Kail & Hollock By Visual Examination Only
5. To Determine Fineness (By Sieve Analysis) Of Cement
6. To Conduct Field Test Of Cement.
7. To Determine Normal Consistency Of Cement
8. To Determine Initial And Final Setting Times Of Cement
9. To Determine Soundness Of Cement
10. To Determine Compressive Strength Of Cement
11. The Students Should Submit A Report Work On The Construction Materials, Water Proofing Material, Cements, Steel, Paints And Timber Products Available Local Market. They Will Also Show The Competitive Study Based Upon The Cost, Brand Name, Sizes Available In The Local Market

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	2	-	25	-	-	50	3	75





Detailed Contents

Unit No.1 Introduction

Topic No.1: Definition Of A Building Different Parts Of A Building, Classification Of Buildings Based On Occupancy

Unit No.2 Foundations

Topic No.2: Concept Of Foundation And Its Purpose, Types Of Foundation-Shallow And Deep, Spread Foundation For Wall

Topic No.3: Stepped Foundation Masonry Pillars Concrete Columns, Thumb Rules For Depth And Width Of Foundation

Topic No.4: Earthwork Surface Excavation, Foundation Trenches, Foundation Shoring, Foundation Timbering De-Watering Of Foundation

Unit No.3 Walls

Topic No.5: Purpose Of Walls, Classification Of Walls, Load Bearing, Non Load Bearing, Dwarf Wall, Retaining, Breast Walls and Partition Walls

Topic No.6: Classification Of Walls As Per Materials Of Construction, Brick, Stone, Reinforced Brick, Reinforced Concrete, Precast, Hollow And Solid Concrete Block And Composite Masonry Walls

Topic No.7: Partition Walls: Constructional Details, Suitability And Uses Of Brick And Wooden Partition Walls Mortars: Types, Selection Of Mortar And Its Preparation Scaffolding, Construction Details And Suitability Of Mason's Brick Layers And Tubular Scaffolding, Shoring, Underpinning.

Unit No.4 Masonry

Topic No.8: Brick Masonry: Definition Of Terms Like Header, Stretcher, Queen Closer, King Closer, Frog And Quoin, Course, Bond, Facing, Backing, Hearting, Jambs, Reveals Soffit, Plinth, Pillars And Pilasters Bond Meaning And Necessity; English, Flemish Bond and Other Types Of Bonds.

Topic No.9: Construction of Brick Walls Methods Of Laying Bricks In Walls, Precautions Observed In The Construction Of Walls, Methods Of Bonding New Brick Work With Old (Toothing, Raking, Back And Block Bonding), Expansion and Contraction Joints

Topic No.10: Importance Towards Special Care During Execution On Soaking Of Bricks, Maintenance Of Bonds And Plumb, Filling Of Horizontal And Vertical Joints, Masonry Work, Restriction Height Of Construction On A Given Day, Every Fourth Course, Earthquake Resistance Measure, Making Of Joints To Receive Finishes.

Unit No.5 Arches And Lintels

Topic No.11: Meaning And Use Of Arches And Lintels, Glossary Of Terms Used In Arches And Lintels Abutment, Pier, Arch Ring, Intrados, Soffit, Extrados, Voussoiers, Springer, Springing Line, Crown, Key Stone, Skew Back, Span, Rise, Depth Of An Arch, Haunch, Spandrel, Jambs, Bearing, Thickness Of Lintel, Effective Span

Topic No.12: Arches: Types Of Arches Semi Circular, Segmental, Elliptical And Parabolic, Flat, Inverted And Stone Arches And Their Construction, Brick Arches And Their Construction

Unit No.6 Doors, Windows And Ventilators

Topic No.13: Glossary Of Terms With Neat Sketches Classification Based On Materials I.E. Wood, Metal And Plastic And Their Suitability For Different Situations. Different Type Of Doors Panel Door, Flush Door, Flazed Door, Rolling Shutter, Steel Door, Sliding Door, Plastic And Aluminium Doors

Topic No.14: Window Panel Window, Glazed Windows (Fixed And Open Able) Ventilators, Sky Light Window, Louvres Shutters, Plastic And Aluminium Windows. Door And Window Frames Materials And Sections, Door Closures, Hold

Unit No.7 Damp Proofing And Water Proofing

Topic no.15: Dampness And Its Ill Effects on Bricks, Plaster, Wooden Fixtures, Metal Fixtures And Reinforcement, Damage To Aesthetic Appearance, Damage To Heat Insulating Materials, Damage To Stored Articles And Health, Sources And Causes of Dampness

Topic no.16: Sources Of Dampness Moisture Penetrating the Building from outside E.G. Rainwater, Surface Water, Ground Moisture. Moisture Entrapped During Construction I.E. Moisture In Concrete, Masonry Construction And Plastering Work Etc. Moisture Which Originates In The Building Itself I.E. Water In



Kitchen And Bathrooms Etc.

Topic no.17: Damp Proofing Materials And Their Specifications: Rich Concrete And Mortar, Bitumen, Bitumen Mastic, Polymer Coating, Use Of Chemicals

Topic no.18: Damp Proofing Of : Basement, Ground Floors, Plinth And Walls, Special Damp Proofing Arrangements In Bathrooms, Wc And Kitchen

Unit no.8 Floors

Topic no.19: Glossary Of Terms Floor Finish, Topping, Under Layer, Base Course, Rubble Filling And Their Purpose

Topic no.20: Types Of Floor Finishes Cast In Situ, Concrete Flooring (Monolithic, Bonded) Terrazzo Tile Flooring, Stone (Marble And Kota) Flooring, Pvc Flooring, Terrazzo Flooring, Glazed Tiles Flooring, Timber Floorin Description With Sketches. The Methods Of Construction Concrete, Terrazzo And Timber Floors And Their Bis Specifications

Topic no.21: Special Emphasis on Level/Slope/Reverse Slope in Bathrooms, Toilets.

Unit no.9 Roofs

Topic no.22: Types of Roofs, Concept of Flat, Pitched and Arched Roofs Glossary of Terms for Pitched Roofs Batten, Eaves, Facial Board, Gable, Hip, Lap, Purlin, Rafter, Rag Bolt, Valley, Ridge, Rain Water Gutter, Anchoring Bolts

Topic no.23: False Ceilings Using Gypsum, Plaster Boards, Cellotex, Fibre Boards, Special Emphasis On Maintenance Of Slopes, Overlaps Of Roofing Materials, Applicability And Problems Of Wind Ties, Size Of Anchoring Bolts

Unit no.10 Stairs

Topic no.24: Glossary Of Terms: Staircase, Winders, Landing, Stringer, Newel, Baluster, Riser, Tread, Width Of Staircase, Hand-Rail,

Topic no.25: Classification Of Staircase On The Basis Of Material – Rcc, Timber, Steel, Aluminium

Topic no.26: Planning And Layout Of Staircase: Relations Between Rise And Tread, Determination Of Width Of Stair, Landing

Topic no.27: Various Types Of Layout-Straight Flight, Dog Legged, Open Well, Quarter Turn, Half Turn (Newel And Geometrical Stairs), Bifurcated Stair, Spiral Stairs.

Unit no.11 Surface Finishes

Topic no.28: Plastering - Classification According To Use And Finishes, Like Plain Plaster, Grit Finish, Rough Cast, Pebble Dashed, Concrete And Stone Cladding Etc., Dubbing, Proportion Of Mortars Used For Different Plasters, Techniques Of Plastering And Curing

Topic no.29: Pointing – Different Types of Pointing and Their Method Painting - Preparation Of Surface, Primer Coat And Application Of Paints On Wooden, Steel And Plastered Wall Surface

Topic no.30: Application Of White Washing, Colour Washing and Distempering, Polishing, Application Of Cement And Plastic Paints.

Topic no.31: Selection Of Appropriate Paints/Finishes for Interior and Exterior Surfaces Importance of Preparation of Surfaces Such As Hacking, Grooving Etc before Application Of Surface Finishes

Unit no.12 Anti Termite Measures

Topic no.32: Introduction, Site Preparation and Chemicals Used in Anti-Termite Treatment of Masonry Foundation, Treatment Of Rcc Foundation, Treatment Of Top Surface Of Earth Filling

Topic no.33: Treatment Of Junction of Walls and Floors, Treatment along External Perimeter of Building Treatment And Selection Of Timber, Treatment In Existing Buildings

Unit no.13 Building Planning

Topic no.34: Site Selection: Factors to Be Considered for Selection of Site for Residential, Commercial, Industrial And Public Building

Topic no.35: Basic Principles Of Building Planning, Arrangement Of Doors, Windows, Cupboards Etc For Residential Building.

Topic no.36: Introduction To National Building Code.

Unit no.14 Building Services

Topic no.37: Introduction Of Fire Fighting Systems, Ducting For Air-Conditioning, Service Line For Cable Telephone, And Electrical Wiring. Garbage Disposal Systems, Water Supply System.

Unit no.15 Elementary Idea Of Interior Decoration



Topic no.38: Wall Paneling, False Ceiling, Flooring Etc.

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment			External Assessment (Examination)			
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
5	-	-	25	-	100	3	-	-	
125									

Recommended Books

1. Gupta, Sushil Kumar, Singla, Dr, And Juneja Bm; "A Text Book Of BuildingConstruction"; Ludhiana, Katson Publishing House.
2. Deshpande, Rs And Vartak, Gv; "A Text Book Of Building Construction"; Poona,United Book Corporation.
3. Rangwala, Sc: "Building Construction"; Anand, Charotar Book Stall
4. Kulkarni, Gj; "A Text Book Of Building Construction"; Ahmedabad Book Depot

Instructional Strategy

While Imparting Instructions In This Subject, Teachers Are Expected To Take Students To Work Site And Explain Constructional Process And Special Details For Various Sub-Components Of Buildings. It Is Also Important To Make Use Of Audio Visual Aids/Video Films (If Available) To Show Specialized Operations. The Practical Work Should Be Given Due Importance And Efforts Should Be Made That Each Student Should Perform Practical Work Independently. For Carrying Out Practical Works, Polytechnics Should Have Construction Yard Where Enough Raw Materials Is Made Available For Students To Perform Practical Work⁸⁶

Suggested Distribution of Marks

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	01	01
2	06	08
3	07	08
4	08	10
5	06	08
6	05	06
7	08	11
8	07	08
9	05	06
10	05	06
11	05	06
12	04	06
13	06	08
14	05	06
15	02	02
Total	80	100



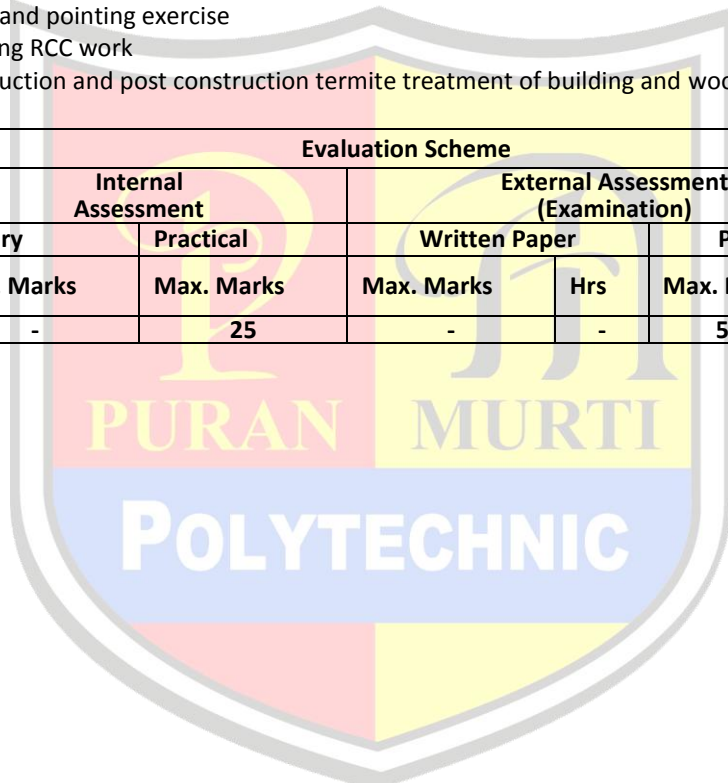
Subject: Building Construction (practical)

Subject Code: 120735(P)

List of practical experiment

1. Demonstration of tools and plants used in building construction
2. To prepare Layout of a building: two rooms building with front verandah
3. To construct brick bonds (English bond only) in one, one and half and two brick thick: (a) Walls for L, T and cross junction (b) Columns
5. Demonstration of following items of work at construction site by:
 - a. Timbering of excavated trenching
 - b. Damp proof courses laying
 - c. Construction of masonry walls
 - d. Laying of flooring on an already prepared lime concrete base
 - e. Plastering and pointing exercise
 - f. Constructing RCC work
 - g. Pre-construction and post construction termite treatment of building and woodwork

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment		External Assessment (Examination)				
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	2	-	25	-	-	50	3	75





Detailed Contents

Unit No.1 Drawing No. 1

Topic No.1: Details Of Spread Footing Foundations, Load Bearing And Non-Load Bearing Wall For Given Thickness Of Walls With The Help Of Given Data Or Rule Of The Thumb, Showing Offsets, Position Of Dpc. The Details Of The Concrete And Brick Plinth Protection Have To Be Shown In The Drawing

Unit No.2 Drawing No. 2

Topic No.2: Plans Of 'T' And Corner Junction Of Walls Of 1 Brick, 1- 1/2 Brick And 2 Brick Thick In English Bond

Unit No.3 Drawing No. 3

Topic No.3: Detailed Drawing Of Basement, Single Wooden Floor, Double Wooden Floor.

Unit No.4 Drawing No.4

Topic No.4: Elevation, Sectional Plan And Sectional Side Elevation Of Flush Door, Glazed Door, Paneled Door And Window, Aluminium Door And Window With Wire Gauge Shutter. Sketches Of Various Joints Of Different Members

Unit No.5 Drawing No.5

Topic No.5: Draw At Least One Sheet Using Cad Software

Unit No.6 Drawing No. 6

Topic. 6: Drawing Plan, Elevation Of A Small Building By Measurement And Foundation Detail And Sectional Elevation.

Unit No.7 Drawing No.7 (A)

Topic No.7: Drawing Detailed Plan, Elevation And Section Of A Two Room Residential Building From A Given Line Plan, Showing Details Of Foundations, Roof And Parapet

Topic No.8: Draw Detailed Plan, Elevation And Section Of: Single Flight R.C.C. Stair Case (ii) Dog Legged Wooden Stair Case

Unitno.8 Drawing No. 8

Topic No. 9: Drawings Of Following Floors Cement Concrete Floors On Ground And At First Floor

- 1) Conglomerate (Concrete Flooring) 2) Bonded Cement Concrete Flooring 3) Terrazzo Flooring 4) Ceramic/Vitrified Tile Flooring

Unit No .9 Drawing No. 9

Topic No.10: Drawing Of Flat Roof, Showing The Heat/Thermal Insulation Provisions

Unit No.10 Drawing No.10

Topic No.11: Draw At Least One Sheet Using Cad Software

Unit No .11 Drawing No.11

Topic No.12: Drawing Details Of Damp Proofing Arrangement Of Roofs And Walls As Per Bis Code. Show The Rain Water Drainage Arrangement Also

Study Scheme			Evaluation Scheme						Total Marks
			Internal Assessment			External Assessment (Examination)			
Hrs/Week			Theory	Practical	Written Paper		Practical		
L	T	P	Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
-	-	4	-	50	-	-	100	3	150

Recommended Books

1. Civil Engineering Drawing By Rs Malik, Asia Publishing House
2. Civil Engineering Drawing By V.B.Sikka. Katson Publishing, Ludhiana
3. Civil Engineering Drawing By Ns Kumar; Iph, New Delhi
4. Principles Of Building Drawing By Mg Shah And Cm Kale, Macmillan, Delhi
5. Building Construction By Moorthy Nrk